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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MCLEAN, VA 22102-3833

EXAMINER

LAVARIAS, ARNEL C

ART UNIT PAPER NUMBER

2872

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/742,895	SUZUKI, KENZABURO	
	Examiner	Art Unit	
	Arnel C. Lavarias	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/24/04, 12/23/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 8, 15, 16 and 25-27 is/are rejected.
- 7) ☒ Claim(s) 4-7, 9-14 and 17-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/24/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendments to the specification of the disclosure in the preliminary amendment filed 9/24/04 are acknowledged and accepted.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. The drawings were received on 12/23/03. These drawings are acceptable.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. *It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.*

5. The abstract of the disclosure is objected to because of the following informalities:

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Abstract, line 3- 'The present invention provides a' should read 'A'

Abstract, line 12- 'L101' should read '(L101)'

Abstract, line 14- 'L105' should read '(L105)'.

Correction is required. See MPEP § 608.01(b).

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Examples of such errors are provided below.

7. The disclosure is objected to because of the following informalities:

Page 8, line 4- insert 'of' after 'focal position' at the beginning of the line

Page 8, line 21- ',' should read '.'

Page 9, line 21- 'a' should read 'an'

Page 13, line 19- insert 'is' after 'it'

Page 21, line 27- 'f17' should read 'F17'

Page 22, line 1- 'grass' should read 'glass'

Page 28, line 4- 'object' should read 'image'

Page 28, line 11- 'an air space' should read 'cement'.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 27 is rejected under 35 U.S.C. 102(b) as being anticipated by Ogata et al. (U.S. Patent No. 6097547).

Ogata et al. discloses a front teleconverter lens system (See for example Figures 5, 10, 14) having three lenses or more, and an afocal magnification, upon attaching to an imaging lens, of 1.4 or more (See 9, line 51-col. 10, line 7), and forming an afocal optical system (See col. 5, lines 1-32), the front teleconverter lens system comprising, in order from an object, a first lens group having positive refractive power (See for example lens group having surfaces r1, r2, r3, r4, r5 in Figure 10; lens group having surfaces r1, r2, r3, r4, r5 in Figure 14); and a second lens group having negative refractive power (See for example lens group having surfaces r6, r7, r8 in Figure 10; lens group having surfaces r6, r7, r8 in Figure 14); a diffractive optical surface being arranged in at least one of the first lens group and the second lens group (See for example r5, r6 in Figure 10; r3, r6 in Figure 14); the first lens group comprising at least one pair of a convex surface and a concave surface adjacent with each other (See for example r2, r3 in Figure 10; r2, r3 in Figure 14); and the following conditional expression being satisfied: $-3.0 < \frac{|Pd|}{Ps} < -0.05$ (See specifically Figures 10, 14; constants for Example 4 on cols. 17-19; constants for Example 7 on cols. 19-21; Example 4 table on col. 23; Example 7 table on col. 24; wherein $|Pd| \approx 4.57$ and $Ps = -5.94$ for Example 7 (Figure 14)), where Ps denotes a combined refractive power of the convex surface and the concave surface of the pair, and Pd denotes a refractive power of the diffractive optical surface.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker (U.S. Patent No. 4171872) in view of Ogata et al.

Baker discloses a front teleconverter lens system having three lenses or more (See Figures 1, 3), and an afocal magnification, upon attaching to an imaging lens, of 1.4 or more, and forming an afocal optical system (See Abstract; col. 4, line 64-col. 5, line 14); the front teleconverter lens system comprising, in order from an object; a first lens group having positive refractive power (See A, B in Figure 3; col. 5, lines 47-64); and a second lens group having negative refractive power (See C, D in Figure 3; col. 5, lines 47-64); and wherein the following conditional expression is satisfied: $1.2 < \frac{\phi F}{\phi R} < 10$ (See Figure 3; any of Examples I-XII; Table II; col. 11, line 59-col. 12, line 13; where $1/H_n$ provides the above ratio), where ϕF denotes the effective diameter of the most object side lens surface of the first lens group, and ϕR denotes the effective diameter of the most image side lens surface of the second lens group. Baker further discloses the first lens group including at least one pair of a convex surface and a concave surface adjacent with each other (See adjacent surfaces 2 of lenses A and B in Figure 3); and the pair of a convex surface and a

concave surface adjacent with each other forming a single cemented surface (See col. 5, lines 30-36). Baker lacks the lens system including a diffractive optical surface being arranged in at least one of the first lens group and the second lens group. However, the use of diffractive optical surfaces in such afocal lens systems is well known and conventional in the art. For example, Ogata et al. teaches a conventional front converter lens system for attachment to a master lens, such as a camera lens (See Abstract; Figures 5, 8-11, 13-14), wherein diffractive optical surfaces are provided on one or more of the lens surfaces comprising the converter lens system (See for example lens surfaces r5, r5 in Figure 10; lens surfaces r3, r6 in Figure 14). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the lens system of Baker further include a diffractive optical surface be arranged in at least one of the first lens group and the second lens group, as taught by Ogata et al., for the purpose of providing chromatic aberration correction to the incident light.

12. Claims 2, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Ogata et al.

Baker in view of Ogata et al. discloses the invention as set forth above in Claim 1, except for the conditional expression $-3.0 < \frac{|Pd|}{Ps} < -0.05$ being satisfied. However, Ogata et al. further teaches that the conventional front converter lens system for attachment to a master lens may be designed in such a way that for the first lens group, the ratio of the refractive power of the diffractive optical surface to the combined refractive powers of the convex surface and the concave surface of the pair may follow

the condition $-3.0 < \frac{|Pd|}{Ps} < -0.05$ (See specifically Figures 10, 14; constants for

Example 4 on cols. 17-19; constants for Example 7 on cols. 19-21; Example 4 table on col. 23; Example 7 table on col. 24; wherein $|Pd| \approx 4.57$ and $Ps = -5.94$ for Example 7

(Figure 14)). Thus, it would have been obvious to one having ordinary skill in the art at

the time the invention was made to have the conditional expression $-3.0 < \frac{|Pd|}{Ps} < -0.05$

be satisfied, as additionally taught by Ogata et al., in the lens system of Baker, for the purpose of controlling the amount of chromatic aberration introduced into the optical system, which allows for weight and cost reductions without increasing the number or thicknesses of the lenses used.

13. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Ogata et al.

Baker in view of Ogata et al. discloses the invention as set forth above in Claims 1-2, except for the pair of a convex surface and a concave surface adjacent with each other having an air space there between. However, it is well known in the art for such pairs of lenses to be separated by air (e.g. air spaced lenses), instead of being cemented or adhered together. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the pair of a convex surface and a concave surface adjacent with each other have an air space there between, to allow for easy replacement of such lenses if they become damaged, since replacement of single simple lenses is less expensive than replacement of complex lens groups.

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14. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Ogata et al.

Baker in view of Ogata et al. discloses the invention as set forth above in Claims 1-2, except for the conditional expression $1.0 < \frac{fF}{DFR} < 10.0$ being satisfied. However, Ogata et al. further teaches that the conventional front converter lens system for attachment to a master lens may be designed in such a way that for the first lens group, the ratio of the focal length of the first group to the distance between the first and second group may follow the condition $1.0 < \frac{fF}{DFR} < 10.0$ (See specifically Figure 10; constants for Example 4 on cols. 17-19; Example 4 table on col. 23; wherein $fF \approx .11$ and $DFR = .0155$ for Example 4 (Figure 10)). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the conditional expression $1.0 < \frac{fF}{DFR} < 10.0$ be satisfied, as additionally taught by Ogata et al., in the lens system of Baker in view of Ogata et al., for the purpose of controlling the focusing of light from the first lens group to the second lens group, while keeping the length of the lens system to a minimum.

15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Ogata et al.

Baker in view of Ogata et al. discloses the invention as set forth above in Claims 1-2, except for the conditional expression $1.0 < \frac{fd}{L} < 10.0$ being satisfied. However, Ogata et al. further teaches that the conventional front converter lens system for attachment to a

master lens may be designed in such a way that for the first lens group, the ratio of the focal length of the lens on which a diffractive surface is placed to the length of the lens system may follow the condition $1.0 < \frac{fd}{L} < 10.0$ (See specifically Figure 10; constants for Example 4 on cols. 17-19; Example 4 table on col. 23; wherein $fd \approx .0754$ and $L = .036$ for Example 4 (Figure 10)). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the conditional expression $1.0 < \frac{fd}{L} < 10.0$ be satisfied, as additionally taught by Ogata et al., in the lens system of Baker in view of Ogata et al., for the purpose of controlling the focusing of light from the diffractive optical element, while keeping the length of the lens system to a minimum.

16. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Ogata et al.

Baker discloses the invention as set forth above in Claim 1, except for the conditional expression $1.0 < \frac{fF}{DFR} < 10.0$ being satisfied. However, Ogata et al. teaches that the conventional front converter lens system for attachment to a master lens may be designed in such a way that for the first lens group, the ratio of the focal length of the first group to the distance between the first and second group may follow the condition $1.0 < \frac{fF}{DFR} < 10.0$ (See specifically Figure 10; constants for Example 4 on cols. 17-19; Example 4 table on col. 23; wherein $fF \approx .11$ and $DFR = .0155$ for Example 4 (Figure 10)). Thus, it would have been obvious to one having ordinary skill in the art at the time

the invention was made to have the conditional expression $1.0 < \frac{fF}{DFR} < 10.0$ be satisfied, as taught by Ogata et al., in the lens system of Baker, for the purpose of controlling the focusing of light from the first lens group to the second lens group, while keeping the length of the lens system to a minimum.

17. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of Ogata et al.

Baker discloses the invention as set forth above in Claim 1, except for the conditional expression $1.0 < \frac{fd}{L} < 10.0$ being satisfied. However, Ogata et al. teaches that the conventional front converter lens system for attachment to a master lens may be designed in such a way that for the first lens group, the ratio of the focal length of the lens on which a diffractive surface is placed to the length of the lens system may follow the condition $1.0 < \frac{fd}{L} < 10.0$ (See specifically Figure 10; constants for Example 4 on cols. 17-19; Example 4 table on col. 23; wherein $fd \approx .0754$ and $L = .036$ for Example 4 (Figure 10)). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the conditional expression $1.0 < \frac{fd}{L} < 10.0$ be satisfied, as taught by Ogata et al., in the lens system of Baker, for the purpose of controlling the focusing of light from the diffractive optical element, while keeping the length of the lens system to a minimum.

Allowable Subject Matter

18. Claims 4-7, 9-14, 17-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter:

Claim 4 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a front teleconverter lens as generally set forth in Claims 1-4, the lens further including, in combination, an incident angle of the principle ray passing through the maximum image height to the diffractive optical surface being 15 degrees or less. Claims 5-7 are dependent on Claim 4, and hence are allowable for at least the same reasons Claim 4 is allowable.

Claim 9 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a front teleconverter lens as generally set forth in Claims 1-2, 8-9, the lens further including, in combination, an incident angle of the principle ray passing through the maximum image height to the diffractive optical surface being 15 degrees or less. Claims 10-12 are dependent on Claim 9, and hence are allowable for at least the same reasons Claim 9 is allowable.

Claim 13 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a front teleconverter lens as generally set forth in Claims 1-2, 13, the lens further including, in combination, an incident angle of the principle ray passing through the maximum image height to the diffractive optical surface being 15 degrees or less.

Claim 14 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a front teleconverter lens as generally set forth in Claims 1-2, 14, the lens further including, in combination, the first lens group having a biconvex lens and at least one negative lens, and the second lens group having a biconcave lens at the most image side, and wherein the conditional expression

$$0.03 < \frac{\phi R}{fd} < 1.0 \text{ is satisfied.}$$

Claim 17 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a front teleconverter lens as generally set forth in Claims 1, 17, the lens further including, in combination, an incident angle of the principle ray passing through the maximum image height to the diffractive optical surface being 15 degrees or less. Claims 18-21 are dependent on Claim 17, and hence are allowable for at least the same reasons Claim 17 is allowable.

Claim 22 is allowable over the cited art of record for at least the reason that the cited art of record fails to teach or reasonably suggest a front teleconverter lens as generally set forth in Claims 1, 22, the lens further including, in combination, the first lens group having a biconvex lens and at least one negative lens, and the second lens group having a biconcave lens at the most image side, and wherein the conditional expression

$$0.03 < \frac{\phi R}{fd} < 1.0 \text{ is satisfied. Claims 23-24 are dependent on Claim 22, and hence are}$$

allowable for at least the same reasons Claim 22 is allowable.

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Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 9:30 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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6/23/05